

عنوان مقاله:

Evaluation of Progressive Collapse in Steel Structures Designed Based on Iranian Code of Practice for Seismic Resistant Design Buildings (Standard No. 2800), 4th Edition and Iranian National Building Code INBC , Part 10

محل انتشار:

مجله مهندسی عمران و مصالح کاربردی، دوره 2، شماره 4 (سال: 1398)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

In this study, the progressive collapse is examined in steel structures with 4-, 8- and 10-story dual systems of moment resistant and braced frames. Probable risks and unusual loads can lead to progressive collapse in structures, e.g. design or construction errors, fires, gas explosions, accidental overloading, car accidents, bomb explosions, etc. Given the action of these forces over a relatively short period, the dynamic analysis of these incidents appears necessary. In this study, the effect of mentioned incidents is considered through the sudden loss of a member. The studied buildings are designed based to the Iranian National Building Code, Part 6 and Part 10 and Iranian Code of Practice for Seismic Resistant Design Buildings (Standard No. 2800), 4th edition. The structural frames are simulated by finite element method using Abaqus finite element software in order to assess the forces and displacements created in the members. Subsequently, the dynamic response of structure is determined according to the loads and how they are applied to the structure, items of analysis process model (APM) and sudden loss of members. The results of analyses suggest that the loss of middle columns in the studied braced frames is more critical than the loss of corner columns. In other words, the central columns of perimeter frame are more vulnerable than the corner columns.

کلمات کلیدی:

Progressive collapse, Steel structures, Iranian Code of Practice for Seismic Resistant Design Buildings Standard No. 2800, progressive failure, ABAQUS

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